

PrimaryConnections 5Es teaching and learning model

Teaching and learning progresses through five phases: Engage, Explore, Explain, Elaborate and Evaluate. The phases of the PrimaryConnections 5Es teaching and learning model are based on the 5Es instructional model (Bybee, 1997).

PrimaryConnections is based on an inquiry-oriented teaching and learning model. Students use their prior knowledge and literacies to develop explanations for their hands-on experiences of scientific phenomena. Students have opportunities to represent and re-represent their developing understanding while being actively engaged in learning. Students develop investigation skills and an understanding of the nature of science.

It is recommended that the first time a PrimaryConnections unit is taught it is implemented in the sequence given. This provides the opportunity for teachers to appreciate the importance of the instructional sequence of the 5Es model and how it supports student learning.

The phases of the model are the 5Es:

» Engage

The 'Engage' phase is designed to spark students' interest, stimulate their curiosity, raise questions for inquiry and elicit students' existing beliefs about the topic. Students' writing, drawing and talk provide opportunities for the teacher to assess students' prior knowledge, including any alternative conceptions. The teacher then takes account of students' existing ideas when planning future learning experiences.

» Explore

The 'Explore' phase provides students with hands-on experiences of the topic's science phenomena. Students explore ideas, collect evidence, discuss their observations and keep records such as science journal entries. This phase ensures that all students have a shared experience that can be discussed and explained in the 'Explain' phase.

» Explain

In the 'Explain' phase, students discuss and identify patterns and relationships within observations, and develop scientific explanations. Students consider the current views of scientists and deepen their own understanding. They then develop a literacy product to represent their developing understanding. The representations enable the teacher to monitor developing understanding and provide feedback to learners.

» Elaborate

In the 'Elaborate' phase, students plan and conduct an open investigation to apply and extend their new conceptual understanding in a new context. The teacher can use students' reports of their investigation to assess the extent to which students have achieved the investigating outcomes for the unit.

» Evaluate

In the 'Evaluate' phase, students reflect on their learning journey and create a literacy product to re-represent their conceptual understanding. The teacher can use evidence from this lesson to assess the extent to which students have achieved the conceptual learning outcomes for the unit.

❖ Assessment

Assessment is ongoing and embedded to enhance learning. It is linked to the development of literacy products in each phase, with different forms of assessment being emphasised in different phases:

- ◆ In the 'Engage' phase, there is a focus on diagnostic assessment to elicit students' prior knowledge so that the teacher can take account of this when planning how the 'Explore' and 'Explain' lessons will be implemented.
- ◆ In the 'Explore' and 'Explain' phases, literacy products enable the teacher to monitor students' developing understanding and provide feedback that can extend and deepen students' learning through formative assessment.
- ◆ The investigation report produced in the 'Elaborate' phase, and the literacy product developed in the 'Evaluate' phase, provide opportunities for summative assessment of students' learning throughout the unit.

The relationships between the 5Es phases, investigations, literacy products and assessment are illustrated in Table 6.

Table 6: PrimaryConnections 5Es teaching and learning model

Phase	Focus
Engage	Engage students and elicit prior knowledge. <i>Diagnostic assessment</i>
Explore	Provide hands-on experience of the phenomenon. <i>Formative assessment</i>
Explain	Develop scientific explanations for observations and represent developing conceptual understanding. Consider current scientific explanations. <i>Formative assessment</i>
Elaborate	Extend understanding to a new context or make connections to additional concepts through a student-planned investigation. <i>Summative assessment</i>
Evaluate	Students re-represent their understanding and reflect on their learning journey; teachers collect evidence about the achievement of outcomes. <i>Summative assessment</i>

(Source: Australian Academy of Science, 2005)